Title (en)

COMPOSITION AND METHOD FOR MAKING PICOCRYSTALLINE ARTIFICIAL BORANE ATOMS

Title (de)

ZUSAMMENSETZUNG UND VERFAHREN ZUR HERSTELLUNG KÜNSTLICHER PICOKRISTALLINER BORATOME

Title (fr)

COMPOSITION ET PROCÉDÉ DE PRÉPARATION D'ATOMES BORANES ARTIFICIELS PICOCRISTALLINS

Publication

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Application

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Priority

US 2016063933 W 20161129

Abstract (en)

[origin: WO2018101905A1] Materials containing picocrystalline quantum dots that form artificial atoms are disclosed. The picocrystalline quantum dots (in the form of boron icosahedra with a nearly- symmetrical nuclear configuration) can replace corner silicon atoms in a structure that demonstrates both short range and long-range order as determined by x-ray diffraction of actual samples. A novel class of boron-rich compositions that self-assemble from boron, silicon, hydrogen and, optionally, oxygen is also disclosed. The preferred stoichiometric range for the compositions is (B12Hw)x Siy Oz with $3 \leq w \leq 5$, $2 \leq x \leq 4$, $2 \leq y \leq 5$ and $0 \leq z \leq 3$. By varying oxygen content and the presence or absence of a significant impurity such as gold, unique electrical devices can be constructed that improve upon and are compatible with current semiconductor technology.

IPC 8 full level

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CPC (source: EP KR RU)

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